# PRODUCT INFORMATION

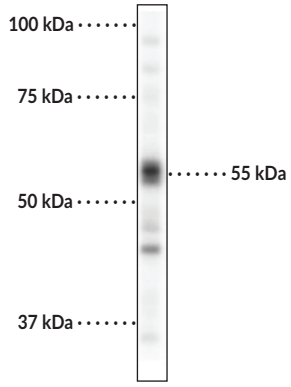
## $GABA_A$ Receptor $\alpha_5$ Subunit Polyclonal Antibody

*Item No. 29271*

### Overview and Properties

| | |
|---|---|
| **Contents:** | This vial contains 100 µl of affinity-purified rabbit polyclonal antibody. |
| **Synonyms:** | γ-Aminobutyric Acid Receptor Subunit $\alpha_5$, $GABA_A$ Receptor Subunit $\alpha_5$, GABRA5 |
| **Immunogen:** | Fusion protein from the cytoplasmic loop of the $\alpha_5$ subunit of the rat $GABA_A$ receptor |
| **Molecular Weight:** | ~55 kDa |
| **Species Reactivity:** | (+) Mouse, rat |
| **Form:** | Liquid |
| **Storage:** | -20°C (as supplied) |
| **Stability:** | ≥1 year |
| **Storage Buffer:** | 10 mM HEPES, pH 7.5, with 150 mM sodium chloride, 100 µg/ml BSA, and 50% glycerol |
| **Host:** | Rabbit |
| **Applications:** | Immunohistochemistry (IHC) and Western blot (WB); the recommended starting dilution for WB is 1:500. IHC and other applications were not tested, therefore optimal working concentration/dilution should be determined empirically. |

### Image




WB of mouse whole brain showing specific immunolabeling of the ~55 kDa $\alpha_5$-subunit of the $GABA_A$ receptor.



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## Description

$GABA_A$ receptors are ligand-gated chloride channels that mediate the effects of the inhibitory neurotransmitter GABA in the CNS.[1,2] They are postsynaptic heteropentameric receptors that contain protein subunits from the following isoforms: $\alpha_{1-6}$, $\beta_{1-4}$, $\gamma_{1-3}$, δ, ε, π, θ, and $\rho_{1-3}$, arranged around a central pore. Phasic inhibitory synaptic transmission is regulated by $\alpha_1\beta_2\gamma_2$ subunit-containing $GABA_A$ receptors, the major isoform found in the brain.[2,3] The α subunit of $GABA_A$ receptors interfaces with a β subunit to form the GABA binding site that initiates GABA-induced action potentials and forms the benzodiazepine binding site with the γ subunit. Approximately 5% of all $GABA_A$ receptors contain $\alpha_5$ subunits and up to 25% of these receptors are expressed in the hippocampus, a region of the brain associated with learning and memory.[4] Deletions in *GABRA5*, which encodes the $\alpha_5$ subunit isoform, have been found on chromosome 15 in patients with Angelman syndrome who typically develop autism spectrum disorder (ASD). Levels of $\alpha_5$ subunit-containing $GABA_A$ receptors are decreased in postmortem hippocampal samples from patients with advanced Alzheimer's disease, Down syndrome, or fetal alcohol syndrome. Cayman's $GABA_A$ Receptor $\alpha_5$ Subunit Polyclonal Antibody can be used for immunohistochemistry (IHC) and Western blot (WB) applications. The antibody recognizes the $GABA_A$ receptor $\alpha_5$ subunit at approximately 55 kDa from mouse and rat samples.

## References


1. Crestani, F. and Rudolph, U. Behavioral functions of $GABA_A$ receptor subtypes - the Zurich experience. *Adv. Pharmacol.* **72**, 37-51 (2015).
2. Hirose, S. Mutant $GABA_A$ receptor subunits in genetic (idiopathic) epilepsy. *Prog. Brain Res.* **213**, 55-85 (2014).
3. Wongsamitkul, N., Maldifassi, M.C., Simeone, X., *et al.* α subunits in $GABA_A$ receptors are dispensable for GABA and diazepam action. *Sci. Rep.* **7(1)**, 15498 (2017).
4. Mohamad, F.H., and Has, A.T.C. The α5-containing $GABA_A$ receptors-a brief summary. *J. Mol. Neurosci.* **67(2)**, 343-351 (2019).



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